

SEQUENCE LISTING

<110> University Catholique de Louvain

<120> Identification of nucleotide sequences specific for mycobacterial and pseudomonas species, development of differential diagnosis strategies for mycobacterial and pseudomonas species

<130> UCL-021-US

<150> US 60/269,848

<151> 2001-02-21

<150> US 60/292,509

<151> 2001-05-23

<150> EP 01870030.2

<151> 2001-02-19

<160> 89

<170> PatentIn version 3.1

<210> 1

<211> 20

<212> DNA

<213> Mycobacterium sp.

<400> 1

gagtaggtca tggctcctcc

20

<210> 2

<211> 20

<212> DNA

<213> Mycobacterium sp.

<400> 2

catgcagcga attagaacgt

20

<210> 3

<211> 20

<212> DNA

<213> Mycobacterium sp.

<400> 3

catgcagcga attagaacgt

20

<210> 4

<211> 18

<212> DNA

<213> Mycobacterium sp.

<400> 4

aacttgacga actcgccg

18

<210> 5

<211> 18

<212> DNA

<213> Mycobacterium sp.

<400> 5

aggatttcgc gcagcatg

18

<210> 6

<211> 18

<212> DNA

<213> Mycobacterium sp.

<400> 6

gtasgtcatr rstyctcc

18

<210> 7

<211> 18

<212> DNA

<213> Mycobacterium sp.

<400> 7

ggtgaacatt gggccgaa

18

<210> 8  
<211> 21  
<212> DNA  
<213> *Mycobacterium avium*

<400> 8

cggtcgtctc cgaagccgc g

21

<210> 9  
<211> 20  
<212> DNA  
<213> *Mycobacterium gastri*

<400> 9

gatcggcagc ggtgccgggg

20

<210> 10  
<211> 19  
<212> DNA  
<213> *Mycobacterium gastri*

<400> 10

gtatcgcggg cggcaagg

19

<210> 11  
<211> 24  
<212> DNA  
<213> *Mycobacterium gastri*

<400> 11

tctgccgatc ggcagcggtg ccgg

24

<210> 12  
<211> 24  
<212> DNA  
<213> *Mycobacterium gastri*

<400> 12

gccggggccg gtattcgcgg gcgg

24

<210> 13  
<211> 22  
<212> DNA

<213> *Mycobacterium gordoneae*

<400> 13

gacggggact agttgtcaga gg

22

<210> 14

<211> 21

<212> DNA

<213> *Mycobacterium intracellulare*

<400> 14

gggcccggg gggcctcgcc g

21

<210> 15

<211> 21

<212> DNA

<213> *Mycobacterium intracellulare*

<400> 15

gcctcggcgc ccaagacagt g

21

<210> 16

<211> 22

<212> DNA

<213> *Mycobacterium leprae*

<400> 16

gatttcggcg tccatcggtg gt

22

<210> 17

<211> 21

<212> DNA

<213> *Mycobacterium kansasii*

<400> 17

gatcgtcggc agtggtgacg g

21

<210> 18

<211> 17

<212> DNA

<213> *Mycobacterium kansasii*

<400> 18

tcgtcggcag tggtgac

17

<210> 19  
<211> 27  
<212> DNA  
<213> *Mycobacterium kansasii*

<400> 19  
atccggccat cgtcgccagt ggtgacg

27

<210> 20  
<211> 21  
<212> DNA  
<213> *Mycobacterium malmoense*

<400> 20  
gacccacaaac actggtcggc g

21

<210> 21  
<211> 21  
<212> DNA  
<213> *Mycobacterium marinum*

<400> 21  
cggaggtgat ggcgctggc g

21

<210> 22  
<211> 20  
<212> DNA  
<213> *Mycobacterium scrofulaceum*

<400> 22  
cggcggcacg gatcggcgtc

20

<210> 23  
<211> 20  
<212> DNA  
<213> *Mycobacterium simiae*

<400> 23  
atcgctcctg gtcgcgccta

20

<210> 24  
<211> 21  
<212> DNA  
<213> *Mycobacterium szulgai*

<400> 24  
cccgccgcga ccagcagaac g

21

<210> 25  
<211> 22  
<212> DNA  
<213> *Mycobacterium tuberculosis*

<400> 25  
gccgtccagt cgttaatgtc gc

22

<210> 26  
<211> 22  
<212> DNA  
<213> *Mycobacterium xenopi*

<400> 26  
cggtagaagc tgcgatgaca cg

22

<210> 27  
<211> 21  
<212> DNA  
<213> *Mycobacterium avium*

<400> 27  
gcgcgggtcgt ctccgaagcc c

21

<210> 28  
<211> 28  
<212> DNA  
<213> *Mycobacterium avium*

<400> 28  
ccgctcggca ctaaaaggca gtggaaagc

28

<210> 29  
<211> 21  
<212> DNA  
<213> *Mycobacterium avium*

<400> 29  
gaagccccgcg ggcaagccaa t

21

<210> 30  
<211> 18  
<212> DNA  
<213> *Mycobacterium gastri*

210 211 212 213

<400> 30	
gatcgccagc ggtgccgg	18
<210> 31	
<211> 18	
<212> DNA	
<213> <i>Mycobacterium gastri</i>	
<400> 31	
gcgggtgccgg ggccggta	18
<210> 32	
<211> 21	
<212> DNA	
<213> <i>Mycobacterium gastri</i>	
<400> 32	
cggtatcgcg ggcggcaagg t	21
<210> 33	
<211> 27	
<212> DNA	
<213> <i>Mycobacterium gordonaee</i>	
<400> 33	
ggcgacgggc actagttgtc agaggta	27
<210> 34	
<211> 16	
<212> DNA	
<213> <i>Mycobacterium intracellulare</i>	
<400> 34	
ccgccccgggg cctcgc	16
<210> 35	
<211> 21	
<212> DNA	
<213> <i>Mycobacterium intracellulare</i>	
<400> 35	
tcgccccca agacagtggc g	21
<210> 36	

Sequence Database

<211> 23  
<212> DNA  
<213> *Mycobacterium kansasii*

<400> 36  
atccggccat cgtcgccagt ggt

23

<210> 37  
<211> 23  
<212> DNA  
<213> *Mycobacterium kansasii*

<400> 37  
gatcgtcggc agtggtgacg ggg

23

<210> 38  
<211> 21  
<212> DNA  
<213> *Mycobacterium kansasii*

<400> 38  
ggcccggtat cacggggca a

21

<210> 39  
<211> 24  
<212> DNA  
<213> *Mycobacterium leprae*

<400> 39  
gatttcggcg tccatcggtg gtag

24

<210> 40  
<211> 32  
<212> DNA  
<213> *Mycobacterium malmoense*

<400> 40  
aacgcaagat ctcgaagggtg ttttcaaagg cg

32

<210> 41  
<211> 23  
<212> DNA  
<213> *Mycobacterium malmoense*

<400> 41  
gaccacacaac actggtcggc gcc

23

<210> 42  
<211> 19  
<212> DNA  
<213> *Mycobacterium marinum*

<400> 42  
gccaatcgcc tcggcggga

19

<210> 43  
<211> 22  
<212> DNA  
<213> *Mycobacterium marinum*

<400> 43  
atcgacggag gtgatggcgc tg

22

<210> 44  
<211> 21  
<212> DNA  
<213> *Mycobacterium simiae*

<400> 44  
cgatcgctcc tggtcgcgcc t

21

<210> 45  
<211> 19  
<212> DNA  
<213> *Mycobacterium simiae*

<400> 45  
ccggcgcacc cgctcgaac

19

<210> 46  
<211> 21  
<212> DNA  
<213> *Mycobacterium szulgai*

<400> 46  
ctgcgatgag caagcggccc g

21

<210> 47  
<211> 16  
<212> DNA  
<213> *Mycobacterium szulgai*

<400> 47  
gcggcccggt cggccg 16

<210> 48  
<211> 24  
<212> DNA  
<213> *Mycobacterium tuberculosis*  
  
<400> 48  
cggccgtcca gtcgttaatg tcgc 24

<210> 49  
<211> 25  
<212> DNA  
<213> *Mycobacterium xenopi*  
  
<400> 49  
cggtagaagc tgcgatgaca cgcca 25

<210> 50  
<211> 15  
<212> DNA  
<213> *Mycobacterium avium*  
  
<400> 50  
gcaaggccaaat ggcga 15

<210> 51  
<211> 14  
<212> DNA  
<213> *Mycobacterium intracellulare*  
  
<400> 51  
ctcgccgccc aaga 14

<210> 52  
<211> 19  
<212> DNA  
<213> *Mycobacterium tuberculosis*  
  
<400> 52  
ccgtccagtc gttaatgtc 19

<210> 53  
<211> 17

<212> DNA  
<213> *Mycobacterium simiae*

<400> 53  
acgatcgctc ctggtcg

17

<210> 54  
<211> 22  
<212> DNA  
<213> *Mycobacterium malmoense*

<400> 54  
aagatctcga aggtgttttc aa

22

<210> 55  
<211> 19  
<212> DNA  
<213> *Mycobacterium avium subspecies paratuberculosis*

<400> 55  
ggtcgcgtca ttcagaatc

19

<210> 56  
<211> 19  
<212> DNA  
<213> *Mycobacterium avium subspecies paratuberculosis*

<400> 56  
tctcagacag tggcagggtg

19

<210> 57  
<211> 216  
<212> DNA  
<213> *Mycobacterium intracellulare*

<400> 57  
gttctacctg tgctgagcaa gctccggta taccgaccgt ctcggccggag ggccgcccgg 60  
ggcctcgccg cccaagacag tggcggcgcc accgggtccc gcacgtgcgc tagcgtgggt 120  
gatcgaccgc gtcgcaatgc ggtgacgcgc ctgcaagcac agcgtcgcat cgccaccgcg 180  
gcgccccgctc ggcacttaaa ggcactggta gcaaca 216

<210> 58  
<211> 881  
<212> DNA

<213> *Mycobacterium avium*

<400> 58 tcgtagctgg cttccctcgta ggtccacacgc gcccgcatcg cttccaggta ttgcgcgcagc 60  
atggtgccgc gcccggccgc cggcacgccc tggtcgccga gttcgctggc gttccagccg 120  
aaccgcacgc cgaggctgac cccggccgcgc gacagatggc caagggtggc aataactttc 180  
gccagcgtga tcgggtcgta ttgcaccggc agggccaccg cgggtggacag ccgcacccgc 240  
gaggtgacgg cacaggccgc gcccagactg acccacgggt ccagggtgcg catgtagcgg 300  
tcgtcgccca gcgacgcgtc gcccgtggtc gggtgccgcgg cctcccgctt gatcgccata 360  
tgcgtgtgtt ccggcacgta gaagggtcgca aaccctgtggt cgtcgcaag ttgcgcggcc 420  
gcagccggag agatgccacg gtcgctggtg aaaagcacaa gcccgtaaatc catgcagtga 480  
attagaacgt gttctacctc tgccggccaa gctgtcgta tacggaccgt ctcgcgcgc 540  
ggtcgtctcc gaagccccgcg ggcaagccaa tggcgacggc accggccgtc gcacgtgcgc 600  
tagcgtgggt gatcgaccgt gtcgctcgcg cagtgcgcg cctgcaagca cccgcgtcgca 660  
tcgcaaccgt ggcccccgtc cggcactaaa aggcagtggc agcaacagggc ggagccatga 720  
cctactctcc cggcagcccc ggatatccac cggcgccagtc tggcgccacc tatgcaggcg 780  
ccacaccatc tttcgccaaa gacgacgacg gcaagagcaa actcccgctc tacctaaca 840  
tcgcccgtggc cgccctgggt ttgcgcgcct acctgctgaa t 881

<210> 59

<211> 642

<212> DNA

<213> *Mycobacterium gastri*

<400> 59

gtgcgcggc gccccggcgg cacgcatgg tcggcgagtt cgtgcgcggc gcggcacgccc 60  
atggtcggcg agttcgtcgg tgttccagcc gaatccgacg ccgacgctga cccggcccc 120  
ggatagttgtt ccagcgtggc aatgctttg gccagcgtga tcgggtcatg ctccaccgca 180  
gcgcaaccgc ggttgacagc ctgactcggg aggtgaccgc tgaagccgca cccaaagctca 240  
cccacgggtc cagggtgcbc atatacggtt cgtccggcag cgacgcgtca cccgtcgtgg 300  
gatgggcggc ttcccgttt accgggatat gcgtgtgttc gggcacgtag agagtgcgaa 360  
agccatggtc gtccggcagt ttgcggctg ccgcggggga gatcccacgg tcgctggta 420  
aaaggacaag cccgtaatcc atgaacagaa tttagaacgtg ttctacctcc gccgggcaag 480

cggtcatct gccgatcgcc agcggtgccg gggccggtat cgccggcgcc aaggtcgcca 540  
cgcggtgagt acccgccgt ggcgtacgt gggtcatcga attgtgtcgc agggagcaat 600  
cgtcgattt cagcaggcgt agcgacggca ccggaggtaa ca 642

<210> 60  
<211> 745  
<212> DNA  
<213> *Mycobacterium gordonae*

<400> 60  
gtgcgacgac ggccggccag cacgttatgg tcggcgagct cgtcggtgtt ccagccgaac 60  
ccgacgcccga ggcttaactcg cccggccggac aggtgatcca gcgtggcgat gctttcgcc 120  
aaggtgatcg ggtcatgctc gacggcaac gcgactgccc tcgacagccg caccggcgac 180  
gtcacagcac acggccgcgc caggtcacc cagggatcca gggtgcgcat ataacggtcg 240  
tcgggcagcg tctcgctcc ggtgggtggta tgagccgcct cgcgtttgat cgggatatgc 300  
gtgtgttcgg gtacgttagaa ggtgtgaaaa ccatgtgtgt cggcaagttt cgctgctgcc 360  
gcaggggaaaa taccgcgatc gctggtaac agaacgaggc tgttagtccat gccccaaattt 420  
agaacgtgtt ctacttttgg ccgcagccga cccccctgcgg cgacgggcac tagttgtcag 480  
aggtgcgcta gcgtggttga tcgaatgcgt cgcaggccgt accgcgtcgt gccgaagcag 540  
agggggccgtg acggcacccgg aagcaacagg aggacttatg acctacccgc ccggtagtcc 600  
cggatatcca tccggccagc agtcggccgg caactacggc agctccgcgc ccggccgg 660  
ccagtcgcag ccgggtgaaa gcaagctggg actgtacctg gccatcgccg tggcggccct 720  
ggccctactg gcgtacctct tcagc 745

<210> 61  
<211> 785  
<212> DNA  
<213> *Mycobacterium kansasii*

<400> 61  
gtgcggccggc ggcggccggc cacggccatgg tcagcgagtt cgtcggtgtt ccagccgaat 60  
ccgacgcccga cgctgacccgg ccccccggat aggtggtcca gcgtggcaat gctttggcc 120  
agcggtatcg ggtcatgctc gacggcaac gcaaccgcgtt ttgacagtcg gacccggaaag 180  
gtgaccgcgtg aagccgcgcc caaactcacc cacgggtcca gcgtgcgcata tagcggtcg 240  
tccggcagcg acgcgtcacc cgtcggtggta tggcggccctc ccgtttgacc gggatgtcg 300

tgtgttcggg cacgtagaaa gtgcgaaagc catggtcgtc ggccagttc gcccgtgccg 360  
cgggagaaaat gccacggtcg ctggtaaaaa ggacaagccc gtaatccatg aacagaatta 420  
gaacgtgttc tacctcagcc gggcaagcgg ctcatccgcc gatcgtcggc agtggtgacg 480  
gggcggtat cacggggca aggtcgccac ggccgcgagta ccaggccgtg cgctagcgtg 540  
ggtcatcgaa tcgtgtcgca gggagcaatc gtcgcattgc agcaggcgta gcgacggcac 600  
tggaggtaac aggaggagcc atgacctact caccaggtag tcccgatata ccgcccgcgc 660  
aatcgccgg ctcctacgga gccgccacac cgtcttcgc caaggccgac gacggtgtca 720  
gcaagcttcc gatgtacctg agcatggcgg ttgccgcgct cgggctgctg gcgtatctgg 780  
ccagc 785

<210> 62  
<211> 691  
<212> DNA  
<213> *Mycobacterium malmoense*  
  
<400> 62  
tcgttaggccc cttccctcctg ggtccacagc gcccgcattt cctcgatgtt ttcacgcaggc 60  
atggtgcgac ggcccccggc cggcacgccc tggtcggcga gtcgtcggt gttccagcca 120  
aaccacaacgc cgaggctgac cccggccggc gacaggttgtt ccaagggtggc aataactttc 180  
gccagcgtga tcgggtcggt ctcgacgggc agcgccaccg cggttagacag ccgcacccgc 240  
gacgtcacgg cgacgcggc gcccaggctc acccacgggtt ctgcgtgcg catatagcgg 300  
tcgtccggca agcgacgcgc caccctcggtt cggatggggcc gcctcgcgct tgaccggat 360  
atgggtgtgt tccggcacgt agaacgtctg gaagccgtgg tcgtcgccaa gtttggcggc 420  
tgccgcgggg gagatgcccgc ggtcgctggt gaaaagtaca agcccgtaat ccatggacag 480  
aattagaacg tggcttaccg gcggtggca agccgctgcg ccggcgagga tctcgactcg 540  
gaccacacaac actggtcggc gccggccggc ccgacagggtc ggtcggcccg gcacggcgg 600  
ccgaacgtgc gctagcgtgg gtgatcgatc gcgtcgcaac gcaagatctc atgcggcgctc 660  
gctgagggtc ttgaaggcac tggaagcaat a 691

<210> 63  
<211> 698  
<212> DNA  
<213> *Mycobacterium simiae*

<400> 63 tcgtattggg cttttccctg cgtccacagc gccccatgg cttccaggtt ctcgcgcagc 60  
atggtccggcc ggcgcgcccgg cggcaacgttgg tggtcggccca gttcgctgggt gttccaaaccg 120  
aaccggacgc ccacactgac ccgtccggccg gacagatggt ccagggtggc gatgctttc 180  
gccagcgtga tcgggtcgta ctcgacgggc agcgccgaccg cggtggacag tcgcacccgc 240  
gaggtgaccg cgcacgcccgc gcccagactg acccacgggt ccagcgtgcg catgtagcgg 300  
tcgtcgggca gcgattcgta gcccgtcgta ggatggggccg cctcgccgtt gatcgggatg 360  
ttagtgtgtt ctggcacgta gaacgttggta aagccatggt cgtcggcgag tttggccgcg 420  
gccgccccggg cgatgcccccg atcactggtg aaaagcacga gcccgtaaatc catgcacaga 480  
attagaacgt gttctacctc tgtggagcaa gcggcccccg ctacgtcgac ccgcagacgg 540  
gccgctgaga cgatcgctcc tggtcgcgccc tagggggccgg tcgctccgc gcacccgctc 600  
gaacgtgcgc tagcgtggtt gatcggtcgcc gctgtacgca aacgcgggca agcagtgcacg 660  
tcgcgccccga cgaggtcttg aaggcactgg aagcaaca 698

<210> 64  
<211> 712  
<212> DNA  
<213> Mycobacterium szulgai  
  
<400> 64  
gtgcggccgg ccccgccgg gacgccgtga tcagcgagct cgtcggatt ccagccgaag 60  
ccgacgcccga ggctgaccccg gctgccggac agatgatcca gcgtggcaat gctttggcc 120  
agcgtgatcg gatcatgctc gaccggcagc gccaccgcgg tggacaaccg gacccgagac 180  
gtcaccgcgg ccgcagcacc caaactcacc cacgggtcca gcgtgcgcatt gtagcggtca 240  
tcgggcagcg acgcgtcaact cgtagtggttggcct cccgcggatcgat cggatgtgg 300  
gtgtgttcag gcacgtagaa cgtctgaaaa ccgtggtcgt cggccagctt tgccggccgccc 360  
gccggggcaaa tgccgcgatc gctggtgaaa agtacaagcc cgtaatccat gcaccgaatt 420  
agaacgtgtt ctacctgcga tgagcaagcg gcccggtcgg ccgacgagca ggtcggcccg 480  
gcgcgaccag cagaacgtgc gctagcgtgg ttgatcgagt cgccgcaccgg aaagcaaccg 540  
gaagtaatca ggaggagcca tgacctactc gaccggcagc cccggatatc cgcctgcgca 600  
gcagcccccggg gggtcgtacg gcggccac tcctggtgac gctcagagca agcttccgct 660  
gtacctcagc atggcgggtgg ccgcgcgtgg cctggccgcq tatctcqcca qc 712

200 100 50 0

<210> 65  
<211> 802  
<212> DNA  
<213> *Mycobacterium tuberculosis*

<400> 65  
tcatagcagg ctcctcttg ggtccacaac gcccgcacg cctcgaggta ttcgcgcagc 60  
atgggtgcggc ggcgtccggg tggcacacca tgatcgacga gctcgtcggt gttccagccg 120  
aaccgcaccc cgacgctgac ccggccgtgc gacaaatgat ccagcgtcgc aatgctttc 180  
gccagcgtga tcggatcatg ctcgaccggc agcgccacccg cggtggcaag ccggatccgc 240  
gacgtcaccg ccgatgctgc tcccaggctc acccacgggt ccaacgtcgc catatagcgg 300  
tcgtccggca gcgaaagcgtc acccgctgac ggatggggcg cctggcgctt gaccggatg 360  
tgggtgtgtt cgggcacgta aaacgtgcga aaccgcgtggc tttcagcaag tctggcgcc 420  
gcggccgggg tgatgcccgcg gtcgctgggt aacagcacaa gtccgttagtg catgcaccga 480  
attagaacgt gttccacactg cgccggcaa gcggccgtcc agtcgttaat gtcgcagcgc 540  
ccggtcgtc cggcagcggc acccgAACgt ggcgttagcgt gtttgcgtcga atcgcgtcgc 600  
cgggagcaca gcgtcgact gcaccagtgg aggagccatg acctactcgc cggtaaccc 660  
cgatacccg caagcgcagc cggcaggctc ctacggaggc gtcacacccct cggtcgccca 720  
cgccgatgag ggtgcgagca agtaccgat gtacctgaac atcgcgggtgg cagtgcgtgg 780  
cctggctgcg tacttcgcca gc 802

<210> 66  
<211> 628  
<212> DNA  
<213> *Mycobacterium bovis*

<400> 66  
tcatagcagg ctcctcttg ggtccacaac gcccgcacg cctcgaggta ttcgcgcagc 60  
atgggtgcggc ggcgtccggg tggcacacca tgatcgacga gctcgtcggt gttccagccg 120  
aaccgcaccc cgacgctgac ccggccgtgc gacaaatgat ccagcgtcgc aatgctttc 180  
gccagcgtga tcggatcatg ctcgaccggc agcgccacccg cggtggcaag ccggatccgc 240  
gacgtcaccg ccgatgctgc tcccaggctc acccacgggt ccaacgtcgc catatagcgg 300  
tcgtccggca gcgaaagcgtc acccgccgtc ggatggggcg cctggcgctt gaccggatg 360

tgggtgtt cggcacgta aaacgtgcga aaccgtggc tttcagcaag tctggcgcc 420  
gcggccgggg ttagcccgcg gtcgctggtg aacagcacaa gtcgttagtg catgcaccga 480  
attagaacgt gttccacctg cgccggcaa gcggccgtcc agtcgttaat gtcgcgagcg 540  
ccggtcgctc cggcagcggc acccgaacgt gcgctagcgt gttgatcga atcgcgtcgc 600  
cgggagcaca gctcgcact gcaccagt 628

<210> 67  
<211> 400  
<212> DNA  
<213> *Mycobacterium xenopi*

<400> 67  
gttcacccac cgcgagcaag cggcgccggt agaagctgcg atgacacgccc agtcgcgcg 60  
agaccccccgc cgccaggtgc gctagcgtgg atggcgaat cgctcgcaa cgctgcct 120  
gacaagtacac ggcgttaatg gagcggtcca cgcagcgtcg cgccgaagcg gcgcctggg 180  
gatacagcgt cgcaacacag tggcgccca acggcactga tgcacaggag aagccatgac 240  
gtactcgccc gtagcccg gatatccacc cgcgcagtcc cccggttcct acggcggtc 300  
cccacagtcg ttgcacaaat ccgatgacgg cgccagcaag ctgcagctgt atctgaccgt 360  
cgccgtggtg gctcggcc tggccgccta cctggcgagt 400

<210> 68  
<211> 707  
<212> DNA  
<213> *Mycobacterium paratuberculosis*

<400> 68  
tcgtagctgg cttcctcgac ggtccacagc gcccgcacatcg cttccaggtt ttgcgcgc 60  
atggtgcggc gcccggccgc cggcacgccc tggtcggcg gttcgtcggt gttccagccg 120  
aaccgcacgc cgaggctgac cccgcgcgc gacagatggt caagggtggc aataactttc 180  
gccagcgtga tcgggtcgat ttcgaccggc agggccaccc cggtggacag cccgcacccgc 240  
gaggtgacgg cacaggccgc gcccagactg acccacgggt ccagggtgcg catgtacgg 300  
tcgtcggca ggcacgcgtc gcccgtggc ggggtgcggc cttccgcgtt gatcggata 360  
tgcgtgtt cggcacgta gaaggtgcga aaccgtggt cgtcgcaag cttcgccggcc 420  
gcagccggag agatgccacg gtcgctggtg aaaagcacaa gcccgtatc catgcagtga 480  
attagaacgt gttctacccgc tgcggggcaa gctgtcgat tacggaccgt ctcgcgcgc 540

ggtcgtctgc gaagcccgcg ggcaagccaa tggcgacggc accggccgtc gcacgtgcgc 600  
tagcgtgggt gatcgaccgt gtcgctcgcg cagtgacgcg cctgcaagca ccgcgtcgca 660  
tcgcaaccgt ggcgcccgtc cggaactaaa aggcagtggc agcaaca 707

<210> 69  
<211> 686  
<212> DNA  
<213> *Mycobacterium marinum*

<400> 69  
tcgtaggcgg cttcctcctg cgtccacagt cgcccgcatc gcctcgaggt attcacgcaa 60  
catcgtgcgg cgccgtccgg gtggAACGCC atggtcggcg agttcgtcggt tgttccaacc 120  
gaacccccacg ccgaggctga cccgtccgccc ggacagatga tccagcgtgg caatgcttt 180  
ggccagggtg atcgggtcat gctcgacggg cagcgccacc gcagtcgaca gccgtaccccg 240  
cgagggtcacc gccgatgcgg cgcccaaact cacccagggg tccagcgtgc gcatataacg 300  
atcgtcggga agcgaggaat cgcccgctgt tggatgagcg gcttctcgct tgattggat 360  
atgggtgtgc tcaggcacgt agaagggtgtg aaagccgtgg tcgtcagcga gtctcgccgc 420  
cgccgcccga gcgatgcgcg ggtcgctggta gaaaagcaca agcccatagt ccataacaga 480  
attagaacgt gttctacctc ggccgggcaa gcgcggcccg cgccaaatcgg ctcggcggga 540  
tcgacggagg tggatggcgct ggtcgagcgg gggcagggtcg ccgcggcgcg agcaccggaa 600  
cgtgcgctag cgtgggtgtt cgaatcgcgt cgcaaggacc aagcgtcgca atgcagcagc 660  
ggcgccgcga cggcgccaa gtaaca 686

<210> 70  
<211> 685  
<212> DNA  
<213> *Mycobacterium ulcerans*

<400> 70  
tcgtaggcgg cttcctcctg cgtccacagc gcccgcacatcg cctcgaggtt ttcacgcaac 60  
atcgtgcggc gcccgtccggg tggaacgcca tggtcggcgat gttcgtcggt gttccaaccg 120  
aaccccacgc cgaggctgac ccgtccgccc gacagatgtat ccagcgtggc aatgcttt 180  
gccagggtga tcgggtcatg ctcgacgggc agcgccaccg cagtcgacag ccgtacccgc 240  
gaggtcaccgc cgatgcgcg gcccggccactc acccagggtt ccagcgtgcg catataacga 300

tcgtcggaa gcgaggaatc gcccgtcggtt ggatgagcgg cttctcgctt gattggata 360  
tgggtgtgct caggcacata gaaggtgtga aagccgtggt cgtcagcgag tctcgccgcc 420  
gccgcccggag ccatgcccgcg gtcgtggtg aaaagcacaa gcccatacgatc cataacagaa 480  
ttagaacgtg ttctacctcg gccgggcaag cgccccccgc gccaatcgcc ttggcgggat 540  
cgacggaggt gatggcgctg gtcgagcggg ggcaggctgc cgccggcgca gcaccggAAC 600  
gtgcgcttagc gtgggtgttc gaatcgctc gcagggacca agcgtcgcaa tgcagcagcg 660  
gcgcgcgac ggcgcaag taaca 685

<210> 71  
<211> 729  
<212> DNA  
<213> *Mycobacterium leprae*

<400> 71  
tcatataacg gtttcattct tgtgtccata atgcctgcatt tgcttcgagg cattcgatca 60  
ccatggtgcg ggcggcccg gatggcacat cgtgatcggt gagctcggtt gtcttccaaac 120  
cgaacccgac gccaaggatc actcaactcgcc cgacaaatt atccagggtt acaataacttt 180  
tcgcaagtgt gattgggtca ttttagacgg gcagcgccac caccatgaac agtcgttagcc 240  
tgccgatata acccgcatgt cgcggccaaa cttacccatg agtcataggt acgcattcgca 300  
tatacgatgc gtcactggac agtataactc atccgttaacc aggttagtgg gtctgagtgg 360  
caatggcata tgggtgtttt cggcacata gaacttgcgg aagccgtgg tctccgcaag 420  
cttgactgct gccgggggg tggatcgcccg gtcgttggtt aaaagcgcaa tcccgtagcc 480  
cataccaaga atttagagcg tttccaccc ggcacggcca agcggtcgatccgacgattt 540  
cgccgtccat cgggtggtagg cgagctgaca cgcaggctcgat gcccggcgcc tggccctaaac 600  
gtgcgcttagc gttgtatgatc gaatcgcccg caacgtaaac gctgccaatt tggcggttta 660  
tccaaacggtg cgcatggag cacagcggtt cactgcagca gtggcgccgt gacggcactg 720  
gaaataaca 729

<210> 72  
<211> 129  
<212> DNA  
<213> *Mycobacterium nonchromogenicum*

<400> 72  
gttcctgttc ggcgggcaac ggggggggtcc ttgtcgccca gtgttgcaccc accgactcg 60

卷之三

cccgcaagtgcgatggtcgaa ggcgcggccgca ccgccccacca ggcgcctgccc  
acaagcaca 129

<210> 73  
<211> 219  
<212> DNA  
<213> *Mycobacterium scrofulaceum*

```
<400> 73
gttctacctc cggtgagcaa gctgccgccc cgccggcacg gatcggcgtc caagccggtc 60
gcgacggcac gccccgtcccg aagtgcgcta gctgtggttga tcgatcgctg cgcaacgc当地 120
ccgcccggca cggcattcgt ggaacggcgc gcccgcacgc acagcgccgc gacgcaactg 180
tggcgccccgc aaaggcactt cacggcactg gaagcaaca 219
```

```
<210> 74
<211> 116
<212> DNA
<213> Mycobacterium triplex
```

<210> 75  
<211> 568  
<212> DNA  
<213> *Mycobacterium paratuberculosis*

<400> 75 gatctcagac agtggcaggt ggccgcctccg aagctggcgt cagctattgg tgtaccgaat 60  
gttgttgtca ccgagccggc cccaggtgtg ttcgagttgc agctgagaat tgtcgatccg 120  
cttagttcgc cgcttgaatg gtcgtctgtg ccagccgccc actcgtggtc tctgagtttg 180  
ggtatcgatg aaatgggcgt ctaccagtcg ctcccggttgg cgaacgtatc gggcggttga 240  
gtgggaggcg taccagggtc ggggaaaacc gcgtggctga cgagtgcgtct ggggtcggttc 300  
ggtcgtcag cggcggtcca gttcgctgtc atcgacggga aggggtggta ggacttggaa 360  
tgcctgcgtg ctcgttagctg ccgattcatg aatgacgatc tggagctgcc tgagattgca 420  
gcgattctga atgacgacgac cggtctagtc cgtgatcgaa ttagacaggg caacaacata 480

ttcgatcg ccaacttttggatcgccggccgcggacggccgc aggttccgct ggtgttcgtg 540  
gtgattgacg gctatcgaaaaaaggccgagatc 568

<210> 76  
<211> 715  
<212> DNA  
<213> *Pseudomonas aeruginosa*

<400> 76  
gccccgtcaca ccatgggagt gggtttacc agaagtggct agtctaaccg caaggaggac 60  
ggtcaccacg gtaggattca tgactgggtt gaagtcgtaa caaggttagcc gtatcgaaag 120  
gtgcggctgg atcacctcct ttccagagct tctcgcacaa gttgagcgct cacgcttatac 180  
ggctgttaat taaagacaga ctcaggggtc tgttagctcag tcggttagag caccgtcttg 240  
ataaggcggg ggtcggttgt tcgaatccaa ccagaccac cattgtctgt cggttaacaca 300  
cctgaggcaa atctgtacat gggggcatag ctcagctggg agagcacctg ctttgcgaagc 360  
aggggtcgtc ggttcgatcc cgtctgcctc caccaatcac caacgctaag ggcttgggttc 420  
agacactgaa ccgagaattt tgcattggcg attgagccag tcagaggata tcaacagata 480  
tcggctgtcg ttcttaaca atcttggaaaga agtaagtaat ttggatagcg gaagcgtctt 540  
gagatggacg tggaaactat ccgggttgtg attgtatcga tgtatctcaa gatgattcga 600  
actctaagtt tgactcaatt ggaatacggc acaacgcgag aactcaacct gtaacgagac 660  
agactcgtta tagggtcaag cgaacaagtgcatgtggatggc atgccttggc rrtca 715

<210> 77  
<211> 653  
<212> DNA  
<213> *Burkholderia cepacia*

<400> 77  
gccccgtcaca ccatgggagt gggttgctcc agaagtagct agtctaaccg caagggggac 60  
ggttaccacg gtagtattca tgactgggtt gaagtcgtaa caaggttagcc gtaggggaac 120  
ctgcggctgg atcacctcct taatcgaaga tctcagcttc ttcataagct cccacacgaa 180  
ttgcttgatt cactggtagt acgattgggt ctgttagctca gttggtaga ggcgcacccct 240  
gataaggta ggtcgccagt tcgaatctgc ccagaccac caattgtgg tgtgctgcgt 300  
gatccgatac gggccatagc tcagctggga gagcgccctgc tttgcacgca ggaggtcagg 360  
agttcgatcc tccttggctc caccatctaa aacaatcgac gaaagctcag aaatgaatgt 420

tcgtgaatga acattgattt ctggctttg caccagaact gttctttaaa aattcggta 480  
tgtgatagaa gtaagactga atgatctctt tcactggtga tcattcaagt caaggtaaaa 540  
tttgcagtt caagcgcgaa ttttcggcga atgtcgtctt cacagtataa ccagattgct 600  
tggggttata tggtcaagtg aagaagcgca tacggtgat gccttggcrr tca 653

<210> 78  
<211> 600  
<212> DNA  
<213> Pseudomonas putida

<400> 78  
gggttccccg aagtagctag tctaaccttc gggaggacgg ttaccacggt gtgattcatg 60  
actggggta agtcgtaaca aggtagccgt aggggaacct gcggctggat cacccctta 120  
atcgacgaca tcagcctgct gatgagctcc cacacgaatt gcttgattca ttgtcgaaga 180  
cgatcaagac cctataatagg tctgttagctc agttggtag agcgcacccc tgataagggt 240  
gaggtcggca gttcaaattct gcccagaccc accaatatgc gggccatag ctcagctgg 300  
agagcgcctg cttgcacgc aggaggtcag cgggtcgatc ccgcttggct ccaccactcg 360  
ctttacttga tcagaactta gaaatgaaca ttctgtatg aatgttattt tctgacttt 420  
gtcagatcgt tctttaaaaa ttctggatatg tgatagaaat agactgaaca ccagttcac 480  
tgctggtaga tcaggctaag gtaaaatttg tgagttctgc tcgaaagagc aacgtgcgaa 540  
ttttcggcga atgtcgtctt cacagtataa ccagattgct tggggttata tggtcaagtg 600

<210> 79  
<211> 446  
<212> DNA  
<213> Pseudomonas putida

<400> 79  
gttccaccag aagtagctag tctaaccttc gggaggacgg ttaccacggt gtgattcatg 60  
actggggta agtcgtaaca aggtagccgt aggggaacct gcggctggat cacccctta 120  
atcgacgaca tcagcctgct gatgagctcc cacacgaatt gcttgattct ttgtaaaaga 180  
cgatcaaggc cttgtgcagg cctcgcgttg ttccgtatca gaacttggaa atgagcattc 240  
gcttcgaatg ttgatttctg gctttgtca gatcgatctt taaaaattcg gatatgtgat 300  
agaaaatagac tgaacaccag tttcactgct ggtggatcag gctaaaggtaa aatttgtgag 360

ttctgctcga aagagcaacg tgcgaaatgg cggcgaatgt cgtttcaca gtataaccag 420  
attgcttggg gttatatggt caagtg 446

<210> 80  
<211> 660  
<212> DNA  
<213> *Pseudomonas aeruginosa*

<400> 80  
gcccgtcaca ccatgggagt gggttgcgtcc agaagtagct agtctaaccg caagggggac 60  
ggttaccacg gagtgattca tgactgggt gaagtcgtaa caaggttagcc gtagggaaac 120  
ctgcggctgg atcacctcct taatcgaa tctcagcttc ttcataagct cccacacgaa 180  
ttgcttgatt cactggtagt acgattgggt ctgtagctca gttggtaga ggcgcaccct 240  
gataaggtga ggtcgccagt tcgaatctgc ccagaccac caattgttgg tgtgctgcgt 300  
gatccgatac gggccatagc tcagctggga gagcgccctgc tttgcacgca ggaggtcagg 360  
agttcgatcc tccttggctc caccatctaa aacaatcgctc gaaagctcag aaatgaatgt 420  
tcgtgaatga acattgattt ctggctttt caccagaact gttctttaaa aattcgggta 480  
tgtgatagaa gtaagactga atgatcttt tcactggtaga tcattcaagt caaggtaaaa 540  
tttgcgagtt caagcgccaa ttttcggcga atgtcgctt cacagtataa ccagattgct 600  
tggggttata tggtcaagtg aagaagcgca tacggtggtt gccttggcrr tcasaggcga 660

<210> 81  
<211> 722  
<212> DNA  
<213> *Burkholderia cepacia*

<400> 81  
gcccgtcaca ccatgggagt gggttttacc agaagtggtt agtctaaccg caaggaggac 60  
ggtcaccacg gtaggattca tgactgggtt gaagtcgtaa caaggttagcc gtagggaaac 120  
gtgcggctgg atcacctcct ttccagagct tctcgacaa gttgagcgct cacgtttatc 180  
ggctgttaat taaagacaga ctcaggggtc tggtagctcag tcggtagag caccgttttg 240  
ataaggcggg ggtcggttgc ttccatccaa ccagaccac cattgtctgg cggttaacaca 300  
cctgaggccaa atctgtacat gggggcatag ctcagctggg agagcacctg ctttgcaagc 360  
agggtcgatcc ggttcgatcc cgtctgcctc caccaatcac caacgctaag ggcttgggtc 420  
agacactgaa ccgagaattt tgcattggcg attgagccag tcagaggata tcaacagata 480

tcggctgtcg ttcttaaca atctggaaga agtaagtaat ttggatagcg gaagcgtctt 540  
gagatggacg tggaaactat ccgggttgcg attgtatcga tgtatctcaa gatgattcga 600  
actctaagtt tgactcaatt ggaatacggc acaacgogag aactcaacct gtaacgagac 660  
agactcgta tagggtcaag cgaacaagtg catgtggtgg atgccttggc rrtcasaggc 720  
ga 722

<210> 82  
<211> 725  
<212> DNA  
<213> *Stenotrophomonas maltophilia*

<400> 82  
gccccgtcaca ccatggagt ttgtgcacc agaagcaggt agcttaacct tcgggaggc 60  
gcttgcacgg tgctgcgatg actgggtga agtcgtaaca aggttagccgt atcggaaaggt 120  
gcggctggat cacctcctt tgagcaaaga cagcatcgcc ctgtcggcgc tcttcacaaa 180  
gtacctgcat tcagagaatc acaacggcca ggccgatgtg agagtcctt ttgggcctta 240  
gctcagctgg gagagcacct gcttgcaag caggggtcgt cggttcgatc ccgacagctc 300  
caccatgttc gagctgtata ccgaagtccc ttgcgaagag cccgcacatc catgtgctac 360  
tttttgaaaa agccttcgg gtctgttagt caggtggta gacgcaccct gataagggtg 420  
aggtcggtag ttcgagtcta cccagaccca ccattctctg aatgacgcat acattcgatc 480  
tttatacgca tcagcactgt ggctggtagt gttctttta aaacttgta cgtagcgagc 540  
gtttgagatg ttctatcaga cgttcgtga ggctaaggcg agagacgcaa gtctcttat 600  
tgattgagtc gttatattcg tatccggct ttgtaccccc gggtcgtgtg taacccaagg 660  
caacttgcgg ttatatggtc aagcgaataa ggcacacgg tggatgcctt ggcrtcasa 720  
ggcga 725

<210> 83  
<211> 18  
<212> DNA  
<213> *Pseudomonas* sp.

<400> 83  
acgtcacacc atggagat

<210> 84  
<211> 23  
<212> DNA  
<213> Burkholderia cepacia

<400> 84  
ccctgagtct gtcttaatt tac

23

<210> 85  
<211> 20  
<212> DNA  
<213> Pseudomonas aeruginosa

<400> 85  
cttcgacga ttgttttagt

20

<210> 86  
<211> 21  
<212> DNA  
<213> Stenotrophomonas maltophilia

<400> 86  
tcaataaaag agacttgcgta c

21

<210> 87  
<211> 18  
<212> DNA  
<213> Pseudomonas sp.

<400> 87  
gattgccaag gcatccac

18

<210> 88  
<211> 18  
<212> DNA  
<213> Pseudomonas sp.

<400> 88  
gaggaaggta gggatgac

18

<210> 89  
<211> 18  
<212> DNA  
<213> Pseudomonas sp.

<400> 89  
tggaaacgta ttcaccgt

18